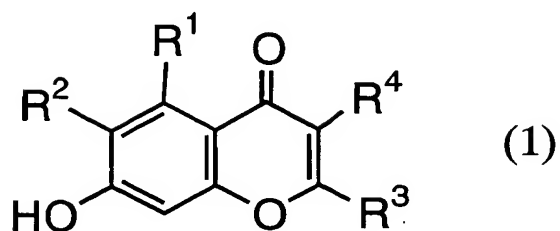


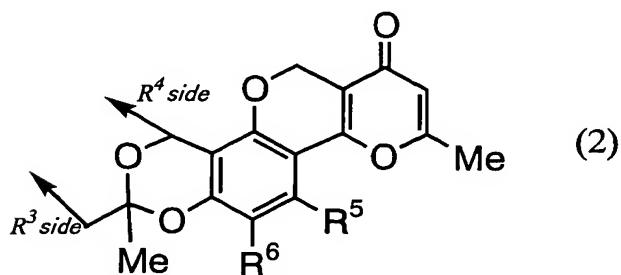
# CLAIMS

1. A compound represented by the general formula (1):



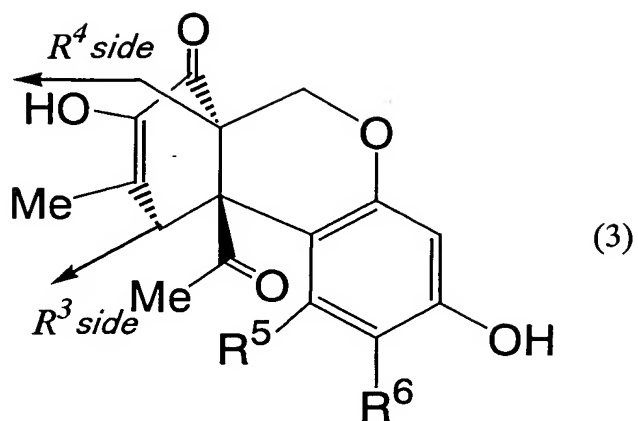
wherein  $R^1$  represents a hydrogen atom or a carboxyl group,  $R^2$  represents a hydrogen atom or a hydroxyl group, and  $R^3$  and  $R^4$  represent one of the following [I] to [IX]:

[I]  $R^3$  and  $R^4$  are joined to form a divalent group of the formula (2):



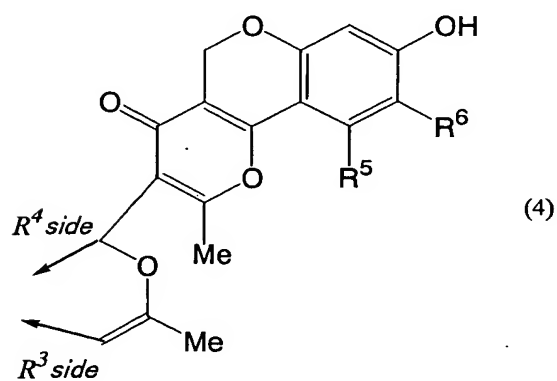
wherein  $R^5$  represents a hydrogen atom or a carboxyl group and  $R^6$  represents a hydrogen atom or a hydroxyl group;

[II]  $R^3$  and  $R^4$  are joined to form a divalent group of the formula (3):



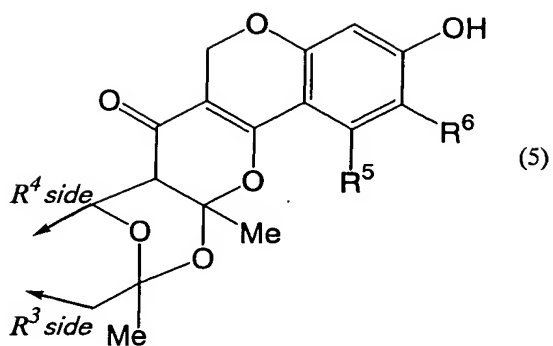
wherein  $R^5$  and  $R^6$  have the same meanings as above;

[III]  $R^3$  and  $R^4$  are joined to form a divalent group of the formula  
(4):



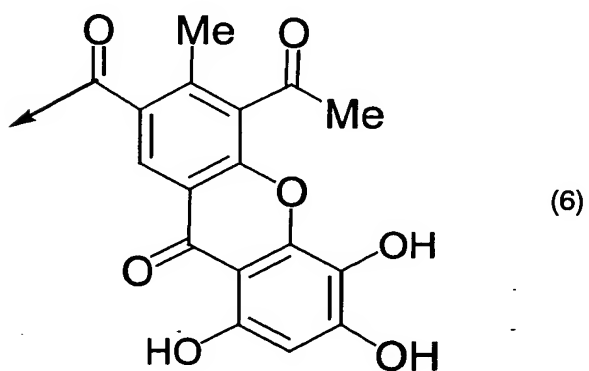
wherein  $R^5$  and  $R^6$  have the same meanings as above;

[IV]  $R^3$  and  $R^4$  are joined to form a divalent group of the formula  
(5):

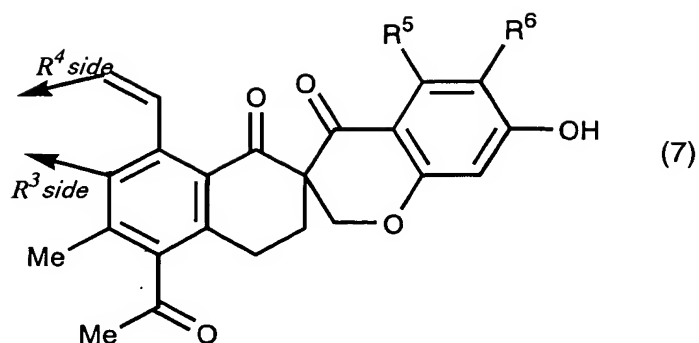


wherein  $R^5$  and  $R^6$  have the same meanings as above;

[V]  $R^3$  represents a hydrogen atom and  $R^4$  represents a group of the formula (6):

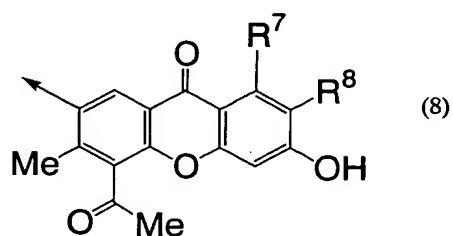


[VI]  $R^3$  and  $R^4$  are joined to form a divalent group of the formula (7):



wherein  $R^5$  and  $R^6$  have the same meanings as above;

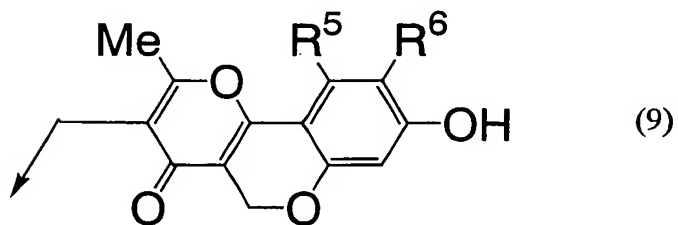
[VII]  $R^3$  represents a group of the formula (8):



wherein  $R^7$  represents a hydrogen atom or a carboxyl group and

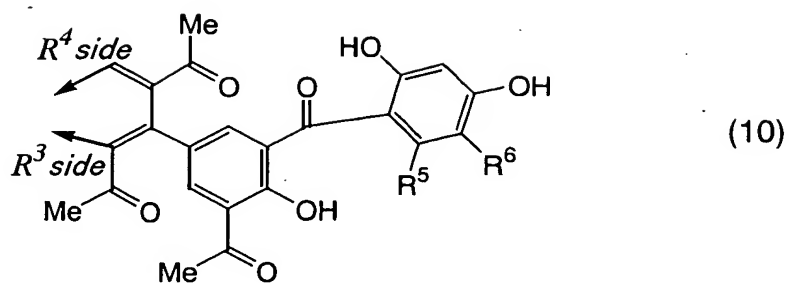
$R^8$  represents a hydrogen atom or a hydroxyl group, and

$R^4$  represents a group of the formula (9):



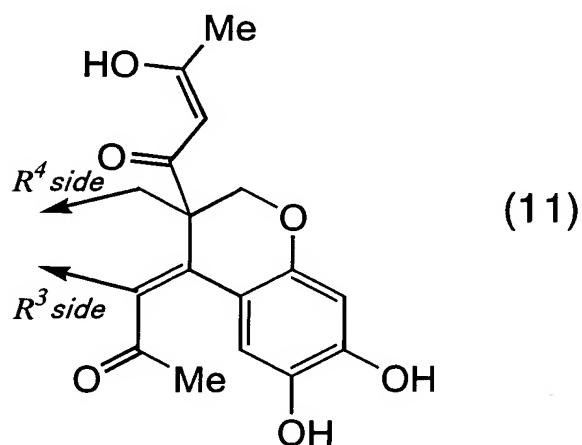
wherein  $R^5$  and  $R^6$  have the same meanings as above;

[VIII]  $R^3$  and  $R^4$  are joined to form a divalent group of the formula (10):



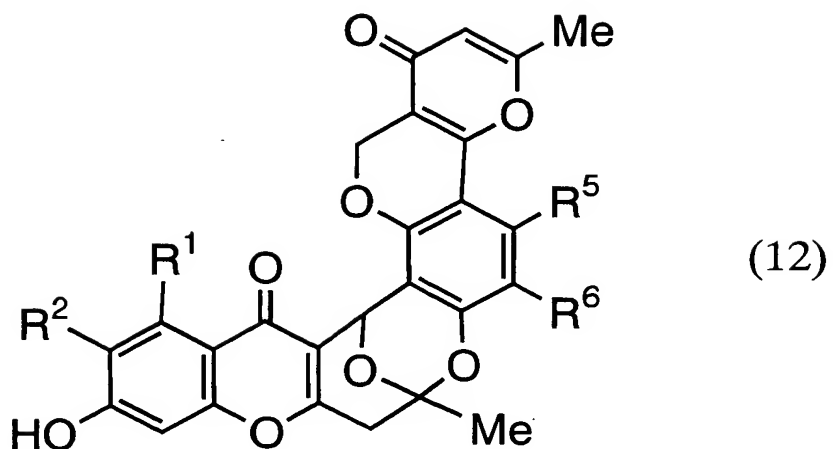
wherein  $R^5$  and  $R^6$  have the same meanings as above;

[IX]  $R^3$  and  $R^4$  are joined to form a divalent group of the formula (11):



or a pharmaceutically acceptable salt thereof.

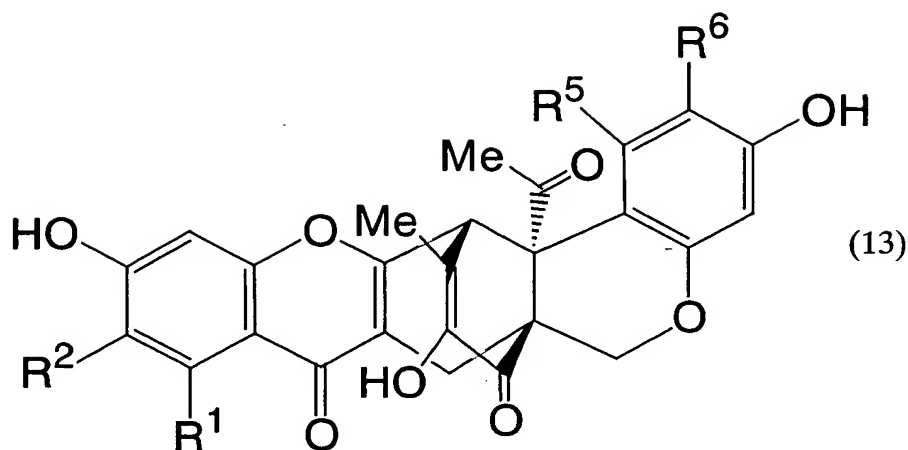
2. The compound according to claim 1 represented by the general formula (12):



wherein  $R^1$ ,  $R^2$ ,  $R^5$  and  $R^6$  have the same meanings as in [1], or a pharmaceutically acceptable salt thereof.

3. The compound according to claim 2, wherein  $R^1$  and  $R^5$  are independently a carboxyl group,  $R^2$  is a hydroxyl group or a hydrogen atom and  $R^6$  is a hydroxyl group in the general formula (12), or a pharmaceutically acceptable salt thereof.

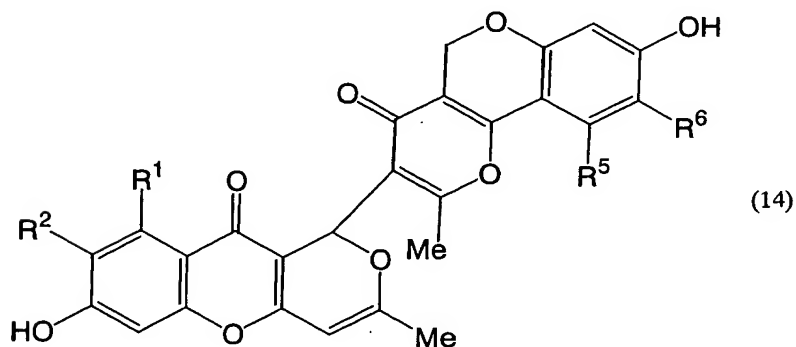
4. The compound according to claim 1 represented by the general formula (13):



wherein  $R^1$ ,  $R^2$ ,  $R^5$  and  $R^6$  have the same meanings as in claim 1, or a pharmaceutically acceptable salt thereof.

5. The compound according to claim 4, wherein  $R^1$  and  $R^5$  are independently a carboxyl group, and  $R^2$  and  $R^6$  are independently a hydroxyl group in the general formula (13), or a pharmaceutically acceptable salt thereof.

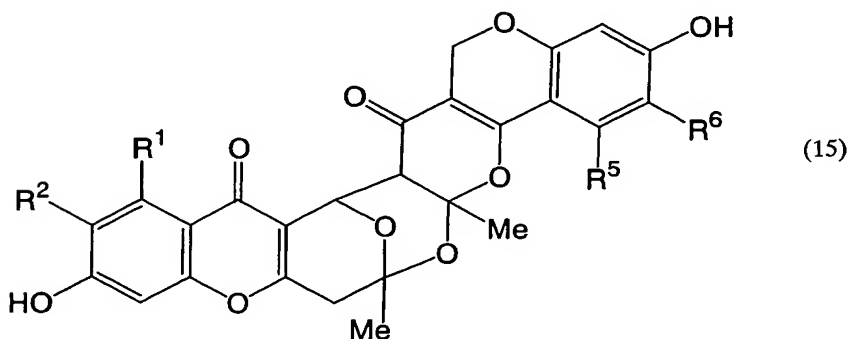
6. The compound according to claim 1 represented by the general formula (14):



wherein  $R^1$ ,  $R^2$ ,  $R^5$  and  $R^6$  have the same meanings as in claim 1, or a pharmaceutically acceptable salt thereof.

7. The compound according to claim 6, wherein  $R^1$  and  $R^5$  a carboxyl group, and  $R^2$  and  $R^6$  are independently a hydroxyl group in the general formula (14), or a pharmaceutically acceptable salt thereof.

8. The compound according to claim 1 represented by the general formula (15):

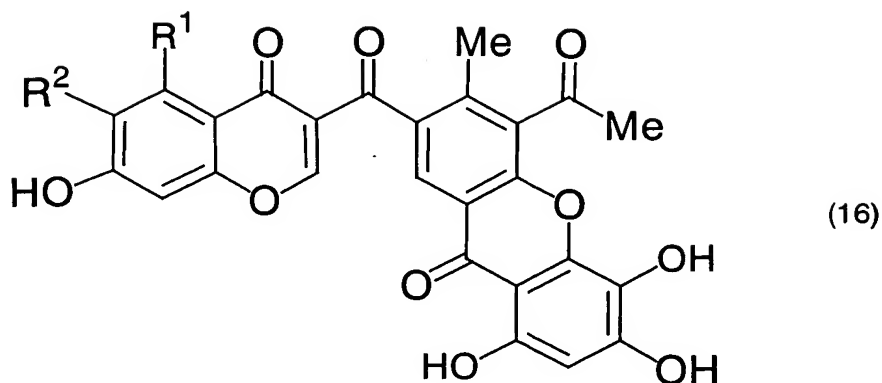


wherein  $R^1$ ,  $R^2$ ,  $R^5$  and  $R^6$  have the same meanings as in claim 1, or a pharmaceutically acceptable salt thereof.

9. The compound according to claim 8, wherein  $R^1$  and  $R^5$  are independently a carboxyl group, and  $R^2$  and  $R^6$  are independently a hydroxyl group in the general formula (15), or a pharmaceutically acceptable salt thereof.

10. The compound according to claim 1 represented by the general formula (16):

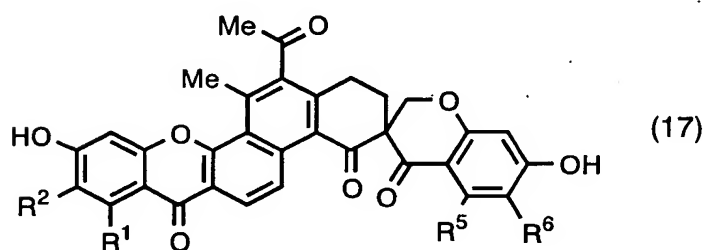




wherein  $R^1$  and  $R^2$  have the same meanings as in claim 1, or a pharmaceutically acceptable salt thereof.

11. The compound according to claim 10, wherein  $R^1$  represents a carboxyl group and  $R^2$  represents a hydroxyl group in the general formula (16), or a pharmaceutically acceptable salt thereof.

12. The compound according to claim 1 represented by the general formula (17):



wherein  $R^1$ ,  $R^2$ ,  $R^5$  and  $R^6$  have the same meanings as in claim 1, or a pharmaceutically acceptable salt thereof.

13. The compound according to claim 11, wherein  $R^1$  and  $R^5$  each represents a carboxyl group, and  $R^2$  and  $R^6$  represent

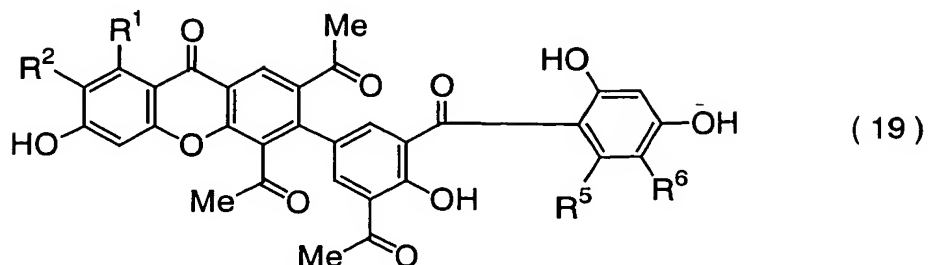
14. The compound according to claim 1 represented by the general formula (18):



15. The compound according to claim 14, wherein R<sup>1</sup> and R<sup>5</sup> are carboxyl groups, and R<sup>2</sup>, R<sup>6</sup> and R<sup>8</sup> are independently a hydroxyl group in the general formula (18), or a pharmaceutically acceptable salt thereof.

65

17. The compound according to claim 1 represented by the general formula (19):



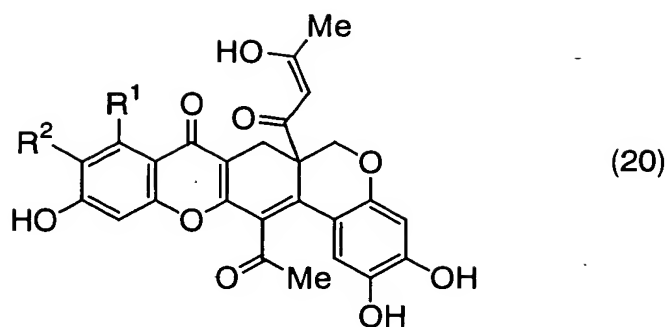
wherein  $R^1$ ,  $R^2$ ,  $R^5$  and  $R^6$  have the same meanings as in claim 1, or a pharmaceutically acceptable salt thereof.

18. The compound according to claim 17, wherein  $R^2$  and  $R^6$  are independently a hydroxyl group in the general formula (19), or a pharmaceutically acceptable salt thereof.

19. The compound according to claim 18, wherein  $R^5$  is a carboxyl group in the general formula (19), or a pharmaceutically acceptable salt thereof.

20. The compound according to claim 19, wherein  $R^1$  is a carboxyl group in the general formula (19), or a pharmaceutically acceptable salt thereof.

21. The compound according to claim 1 represented by the general formula (20):



wherein R<sup>1</sup> and R<sup>2</sup> have the same meanings as in claim 1, or a pharmaceutically acceptable salt thereof.

22. The compound according to claim 21, wherein R<sup>1</sup> is a carboxyl group and R<sup>2</sup> is a hydroxyl group in the general formula (20), or a pharmaceutically acceptable salt thereof.

23. A compound obtainable from SPF-3059 strain which belongs to the genus *Penicillium*, having the following physical and chemical properties and a semaphorin inhibitory activity:

- (a) fast atom bombardment mass spectrum m/z value (M+H)<sup>+</sup>: 545;
- (b) molecular formula: C<sub>28</sub>H<sub>16</sub>O<sub>12</sub>;
- (c) UV-visible absorption spectrum λ<sub>max</sub> (in methanol) nm(ε): 213(41700), 286(29500), 338sh(14900), 429sh(6500);
- (d) Infrared absorption spectrum ν<sub>max</sub> (KBr) cm<sup>-1</sup>: 3358, 3073, 1700, 1674, 1631, 1464, 1276, 1248;
- (e) <sup>1</sup>H-NMR spectrum (DMSO-d<sub>6</sub>, 500 MHz): spectrum chart shown in Figure 1;
- (f) <sup>13</sup>C-NMR spectrum (DMSO-d<sub>6</sub>, 125 MHz): spectrum chart shown in Figure 2.

24. A compound obtainable from SPF-3059 strain which belongs to the genus *Penicillium*, having the following physical and chemical properties and a semaphorin inhibitory activity:

- (a) fast atom bombardment mass spectrum  $m/z$  value  $(M+H)^+$ : 561;
- (b) molecular formula:  $C_{28}H_{16}O_{13}$ ;
- (c) UV-visible absorption spectrum  $\lambda_{max}$  (in methanol)  $nm(\epsilon)$ : 219(34300), 257(28900), 311(28600), 404(14600), 450(14400);
- (d) Infrared absorption spectrum  $\nu_{max}$  (KBr)  $cm^{-1}$ : 3154, 1657, 1605, 1468, 1279;
- (e)  $^1H$ -NMR spectrum (DMSO- $d_6$ ): spectrum chart shown in Figure 3;
- (f)  $^{13}C$  -NMR spectrum (DMSO- $d_6$ ): spectrum chart shown in Figure 4.

25. A compound obtainable from SPF-3059 strain which belongs to the genus *Penicillium*, having the following physical and chemical properties and a semaphorin inhibitory activity:

- (a) fast atom bombardment mass spectrum  $m/z$  value  $(M+H)^+$ : 669;
- (b) molecular formula:  $C_{34}H_{20}O_{15}$ ;
- (c) UV-visible absorption spectrum  $\lambda_{max}$  (in methanol)  $nm(\epsilon)$ : 213(54600), 235sh(39400), 312(31300), 350(24200);
- (d) Infrared absorption spectrum  $\nu_{max}$  (KBr)  $cm^{-1}$ : 3348, 1766, 1707, 1644, 1588, 1464, 1301;
- (e)  $^1H$ -NMR spectrum (DMSO- $d_6$ , 500 MHz): spectrum chart shown in Figure 5;
- (f)  $^{13}C$  -NMR spectrum (DMSO- $d_6$ , 125 MHz): spectrum chart shown in Figure 6.

26. A compound obtainable from SPF-3059 strain which belongs to the genus *Penicillium*, having the following physical and chemical properties and a semaphorin inhibitory activity:

(a) fast atom bombardment mass spectrum  $m/z$  value  $(M+H)^+$ : 549;

(b) molecular formula:  $C_{28}H_{20}O_{12}$ ;

(c) UV-visible absorption spectrum  $\lambda_{max}$  (in methanol)  $nm(\epsilon)$ : 227(30200), 282sh(13500), 315(13900), 356(11000);

(d) Infrared absorption spectrum  $\nu_{max}$  (KBr)  $cm^{-1}$ : 3396, 1688, 1662, 1622, 1470, 1294;

(e)  $^1H$ -NMR spectrum (DMSO- $d_6$ , 500 MHz): spectrum chart shown in Figure 7;

(f)  $^{13}C$ -NMR spectrum (DMSO- $d_6$ , 125 MHz): spectrum chart shown in Figure 8.

27. A semaphorin inhibitor comprising as an active ingredient the compound according to any one of claims 1 to 26, or a pharmaceutically acceptable salt thereof.

28. The semaphorin inhibitor according to claim 27, wherein the semaphorin is a class 3 semaphorin.

29. The semaphorin inhibitor according to claim 28, wherein the class 3 semaphorin is semaphorin 3A.

30. An inhibitor for a nerve outgrowth repelling factor comprising a semaphorin inhibitor according to any one of claims 27 to 29, as an active ingredient.

31. An agent having suppressing action on the growth cone collapse activity and/or on the nerve outgrowth inhibitory

activity in a collagen gel comprising a semaphorin inhibitor according to any one of claims 27 to 29, as an active ingredient.

32. A nerve regeneration promoter comprising a semaphorin inhibitor according to any one of claims 27 to 29, as an active ingredient.

33. A preventive or remedy for neuropathic diseases and/or neurodegenerative diseases, comprising a semaphorin inhibitor according to any one of claims 27 to 29, as an active ingredient.

34. A preventive or remedy for diseases including spinal nerve injury and/or peripheral nerve injury, comprising a semaphorin inhibitor according to any one of claims 27 to 29, as an active ingredient.

35. A preventive or remedy for olfactory abnormality, traumatic neuropathy, cerebral infarctional neuropathy, facial nerve paralysis, diabetic neuropathy, glaucoma, retinitis pigmentosa, Alzheimer's disease, Parkinson's disease, neurodegenerative diseases, muscular hypoplastic lateral sclerosis, Lou Gehrig's disease, Huntington's chorea, cerebral infarction or traumatic neurodegenerative diseases, comprising a semaphorin inhibitor according to any one of claims 27 to 29, as an active ingredient.

36. A process for producing a compound or a pharmaceutically acceptable salt thereof according to any one of claims 1 to 26, wherein a microorganism belonging to the genus *Penicillium* is cultured and that the compound is collected from the culture.

37. The process for producing a compound according to claim 36, wherein the microorganism belonging to the genus *Penicillium* is *Penicillium* sp. SPF-3059.